A Mistaken Sense of Security

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"Cool to the touch"—that's how a petty officer described a steam valve before he and a shipmate started repairing it. They had been told to repack the valve, which was in the upper level of a ship's engineroom.

With the tagout complete, the petty officer decided to get a head start on the job. The problem with his plan was that it didn't include using the low-pressure drains to bleed pressure from the system, then waiting for the pressure to drop. The valve felt cool, so he began removing its bolts.

Navy photo by PH3 Brian Brunelle

When Sailors work on a steam system like this one, it pays to follow the procedures.

After taking out only two bolts, the petty officer left the engineroom. During his absence, the shipmate arrived. He saw what the petty officer had done and assumed the seal on the valve had been broken and the residual steam pressure had been bled from the system. He removed the last two bolts and also left.

The petty officer soon returned, saw that all the bolts were out, and started trying to dislodge the valve. When it broke free, scalding water sprayed on his face, shoulder and back, causing second-degree burns.

This mishap was the result of miscommunication and a failure to use good engineering practices. To prevent recurrences, follow these guidelines[1]:

- Isolate the piping system or component you're working on, and use two-barrier tagout protection. Hang tags to prevent someone from opening the system or component locally or from a remote location.
- Depressurize and drain the isolated portion of the system, then allow enough time for the system to cool before starting maintenance. You also should tag low-pressure drain valves open and check them for residual pressure.
- Slowly and evenly loosen fasteners until the pressure seal on a valve breaks to prevent the system from venting uncontrolled steam and hot water.
- When doing repairs with shipmates, keep one another briefed on the status of the job. Don't assume what work has been done or what procedure is next. If you have a question, talk to your supervisor.
- Have accurate, written work procedures available before starting maintenance or repairs.
- Supervisors should check tagouts for accuracy before letting people do maintenance or repairs on high-temperature, pressurized systems. Make sure work areas are checked for hazards. Review precautions and work procedures.

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For More Info...

[1] Complete guidance for working on steam valves can be found in the NavOSH Program Manual for Forces Afloat (OpNavInst 5100.19C, with change 2), Chapter 13 (Piping Systems); NSTM, Chapter 505, Piping Systems, Sections 1 and 8; and Joint Fleet Maintenance Manual (CinCLantFltInst/CinCPacFltInst 4790.3), Vol. 5, Part I, Chapter 1, and Part II, Chapter 3.